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No. 32. NEW SERIES.

PLANT ORNAMENTATION IN GOTHIC ARCHITECTURE.

By Dr. E. PAULUS.

Beyond all other styles of Architecture the Gothic has made the most lavish use of the vegetable productions of nature in its ornamentations, and we purpose in the present article to take such a review of their chief characteristics as our limits will allow. The Gothic style absorbed, so to speak, the ornamental riches of all the other earlier styles, but at the same time, and this distinguished it from all the other styles which reigned before it in Europe, from the Grecian to the later Romanesque, it seized upon nature herself for its ornamental motives, and that with a boldness quite unexampled in the history of art. Ancient art had indeed borrowed its motives from nature, and especially from the vegetable kingdom to a greater degree than is generally supposed, and we need only compare the remains of antique ornamental marble fragments in the old basilicas of Rome, or look to the still extant coverings and mural paintings of old dwelling houses and sepulchres, and we shall be astonished at the unusual freshness and freedom of execution observable in the motives, which are there taken immediately from nature, the flower wreath, fruit garlands, landscapes etc. But an ornament which, like the Gothic, so readily and closely adopts the vegetable types of nature which, by their luxuriant growth, at last undermine and stifle the very conditions of its existence, this is the token of a new spirit, the mark of bold and fantastic middle ages, exalted by the crusades and by other equally marvellous incidents and ideas.

In ancient art, there is an ever recurring repetition, though in the most variegated conventionalism, of the acanthus leaf and scroll, forms of an extraordinary and indeed unsurpassable beauty, but the Gothic succeeded in selecting many others from the vegetable realm of nature, and applied them with equally good effect, and, what is above all things remarkable is that whereas the acanthus, as an ornament for capital or frieze, requires a white transparent marble, or brass, or some white, colored, or gilded material, the Gothic generally employed only dark and coarse grained stone, such as lime and sand stone; and, where in ancient times metal was mostly used, it availed itself of the dark colored woods, pear, walnut and oak, sometimes with the addition of painting and gilding, adapting its forms to these coarser materials in the most wonderful manner, and obtaining even from the very peculiarities of the material new and unexpected beauties. The so-called Romanesque style of architecture, which owes its origin to the later Roman, but is full of its own lifegiving elements, did not break through the conventional limits of antiquity but took over to itself the acanthus and scroll, and reproduced them in innumerable changes and distortions, and frequently, towards the end of its reign, with the greatest freedom and peculiarity, insomuch that it is often impossible to recognise the original model; then the scroll and leaf work was interwoven with fabulously wild, runic contortions of dragons and other ungainly figures, fantastic decorations which we can trace back to the most ancient times. We find them, for example, entering largely as silver insertions in iron of wonderful execution into the arms and ornaments of the times of the Allemanni and Franks, from their migration till the reign of Charlemagne. Many of the Romanesque ornaments, especially among the brass vessels of this style, consist solely of such dragons and other monsters, forms which linger even through the Gothic, though kept within due limits, and insinuating themselves through the entire German Renaissance, particularly in wood buildings. In France and Italy such configurations are met with but seldom, and

only where the German element penetrated, as in Lombardy and the North of France, where there are strong traces of this fantastic ornament.

The Gothic, or to speak more strictly, the French style soon abandoned the acanthus leaf and scroll as the basis of its ornamentation; it only occurs in the first creations of this glorious style, and then with wonderful purity. It soon applied itself to an energetic study of nature, particularly of indigenous nature, and drew from its wild plants an abundance of the most beautiful motives, which it reproduced in stone and wood with extraordinary skill and facility, and with close resemblance to the originals; and at the time when this style first struck root in Germany, we see the system of decoration with wild plants in free and unsymmetrical wreaths and clusters already in full activity. A remarkable example of this may be seen in the Gothic church at *Wimpfen im Thal* with its cloisters executed according to the French style of architecture (1262—78). In the latter are seen on the Capitals of the window-posts charming specimens of the leaves and fruit of the oak, ivy, strawberry and bean, marigolds with frogs, bearsfoot, roses in bloom, doves and other birds with nests and young, evergreens, fig, lime and maple leaves, colts foot, clover, convolvolus, arum, hazel-wort, briony etc. Besides the above, there occur also in the early Gothic, and frequently also in later times, the poppy, dandelion and thistle, then the laurel, and afterwards the leaves of the pear, mulberry, beech and chesnut, with single flowers such as roses, tulips, lilies, and in the late Gothic, generally conventionalised, the thin and delicate foliage of the leek.

Together with these, the highly important wood carvings, which took their rise in these early Gothic times, among which must be mentioned the stalls, are distinguished by the simplicity of their arrangement, as well as by the grandeur of their ornamentation, consisting chiefly of bands of foliage and flowers, though sometimes also of rather adventurous animal figures. One of the most beautiful examples is the East choir of the cathedral of Naumburg, the exterior of which also displays patterns of the most splendid wreaths of foliage, the magnificent style of which is in perfect harmony with the statuary's art of the period, whose figures are of a simplicity, dignity and elegance, and an almost Grecian gracefulness, which stand in agreeable contrast to the statues of a later period, which are too slender, often distorted and clothed with creased and broken drapery.

This great piece of work represents especially the leaves of the oak, vine and rose, with the frequent addition of fruits and pecking birds: while on the key-stones especially are seen the five cornered leaves and the buds of the passion flower; the glass painting of the day was subject to the same influence, showing beautiful rows of leaves of magical effect, in tapestry-like treatment, while it was further extended to the floorings by the graceful and early practised art of burning bricks of clay, which were then adorned with the leaves of wild plants instead of the common Romanesque interwoven lines, or grim animal figures. Of these wild plants there is an astonishing abundance, among which we will only mention the beautiful leaf of the celandine (chelidonium majus) which is often represented with such strict adherence to nature that we cannot but suppose that the leaf itself had been used as the pattern.

If now we take a view of the Gothic style in its entireness, and its relation to foliage work, we shall find, as we have pointed out above, an overwhelming preponderance of such work, which no earlier style even approaches. The introduction of the buttress on the exterior of cathedrals and churches gave birth to the frequently repeated, though variously designed, forms of the tabernacle inclosing a statue, and to the pinnacle, on which the foliage obtained a sure and prominent place; the stone tops are generally crocketed, and always have finials on the points: at first these were merely shoots or buds, afterwards the buds were enveloped in rich carved foliage; but these plant forms were always strongly conventionalised and in correspondence with their destination. Another excellent place for foliage work was afforded by the creation of the richly profiled vaulted roof, on the key-stone of which we find now those grand unsurpassably beautiful wreaths of leaves, interwoven again with all kinds of other richly leaved and beautiful plants. A complete collection of wreaths carved on key-stones would give the highest conception of the rich abundance of decoration at the disposition of the Gothic style.

In the course of the fourteenth century, the richly executed mullion and tracery work began by degrees to usurp the place of the foliage, which till then had been so widely applied: then too appeared for the first time, especially on stone decorations, corbels, key-stones etc. well designed human masks, peeping out of the foliage, from which in genial execution fell wreaths in long waving ringlets. Everywhere, in glass paintings, high altars, etc., now comes into general use the architectonic frame-work and structure, with its tabernacles and splendid tracery, marking the transition to the productions of the fifteenth century, which afterwards in its second half displays a beauty and boldness in its ornamentation beyond all that the world has ever witnessed. Then suddenly, following the exhaustion of the latter period, the foliage work vies with the very earliest Gothic, and indeed surpasses it in exuberance of flowers, buds and knobs, while a new life and vigour comes into the otherwise stiff architectural forms, which begins to bend and swing the columns, pinnacles, and pediments which it decks with crockets and finials, so that they themselves even assume almost a plant-like appearance, as, for example, the celebrated stone pyx of Adam Kraft in the *Lorenzkirche* at Nuremberg 60 feet in height, the top of which is bent under the vaulted roof.

Such a tendency may certainly be denounced in principle as a downward and degenerate one, still, by the very circumstance of these stiff architectural forms yielding to this exuberance of plant ornamentation, there resulted in these rich and often boldly irregular objects

of decoration a unity and truly fabulous enchantment, which can be compared with nothing else, and which leaves on the mind of the spectator an imperishable impression. Far from wishing to imitate such works, we do but admire them as wonderful pieces of decorative art. The works of the Sculptor, such as statues, masks, animal figures, are with great taste and beauty introduced into these structures, while on any smooth surfaces of the wood work are applied inlaid woods of different colors, and thus we see not unfrequently a general effect produced, as in the celebrated choir stalls at Ulm, by Syrlin, (1469—1474) which together with an inexhaustible richness of foliage, tracery and delicate intarsia, displays an abundance of sculpture, all of which is of the best arrangement, and both as to ornament and statuary of unsurpassable beauty.

The Gothic decorative art appears almost always harmonious and of great importance in secular buildings, especially in wood buildings, and on small objects, such as covers, doors, cupboards etc. Here the tabernacle character is always in the back ground, the simple, horizontal line so well suited to its purpose comes into general use, the foliage, though now in flat treatment, appears always in the most gracefully flowing lines and involutions, chests are generally capped with embattled parapets in wood; very beautiful and applicable to the wants of the present day are those slightly vaulted wooden ceilings with their beams richly chamfered, or carved and ornamented with scrolls and flowers, or even with armorial bearings, sometimes in the natural color of the wood, but more usually painted and gilt.

In metal works also, especially in articles of wrought iron, locks and hinges, brackets, capitals, etc., the foliage work plays an important part, and here again displays a new and wonderfully vigorous vitality, which passed into the Renaissance, and even continued in a healthy and sound condition to the latest *Rococo* times.

The most charming works of Gothic ornamental art were produced shortly before, or simultaneously with the first introduction of the Italian Renaissance into other countries, which gave a new pulsation to the style which had been in use for many centuries, and had indeed, especially in the ornamental part, at its first appearance, a certain relationship to the Gothic; its first pioneers, such as Ghiberti and Alberti, were decided off-shoots from the Gothic, and they it was who applied the natural wild foliage with the greatest judgement and in the highest beauty to their splendid door-frames in brass or marble, and far from that exclusive repetition of the old acanthus leaf, which predominated in the whole of the late Renaissance period, we see especially in the smaller towns of Tuscany, for example in Siena and Pienza, capitals, friezes, furniture, etc., enlivened with the most varied and beautiful forms of leaves, introduced in the most graceful manner into the statues of men and animals borrowed from the antique. More late indeed the acanthus became inevitable, at first in spirited varieties, but afterwards more severe and uniform. In Germany, for example, where the new style did not take root till a hundred years after its rise, the acanthus leaf obtained universal sway, and unfortunately supplanted the various, and rich Gothic forms of leaves, so well suited both to works of wood and stone, and which the art of the present period has more than ever succeeded in regenerating, enriching and ennobling.

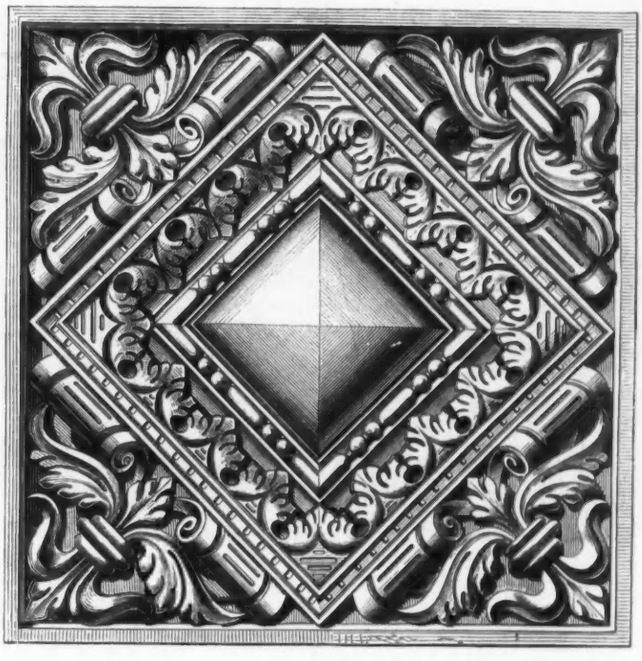
SPECIMENS OF ORNAMENTATION.

Nos. 1—3. German. — Carvings from Stalls of Ulm Minster.

No. 4. French. — Romanesque Capital from Prefecture at Angers.

No. 5.

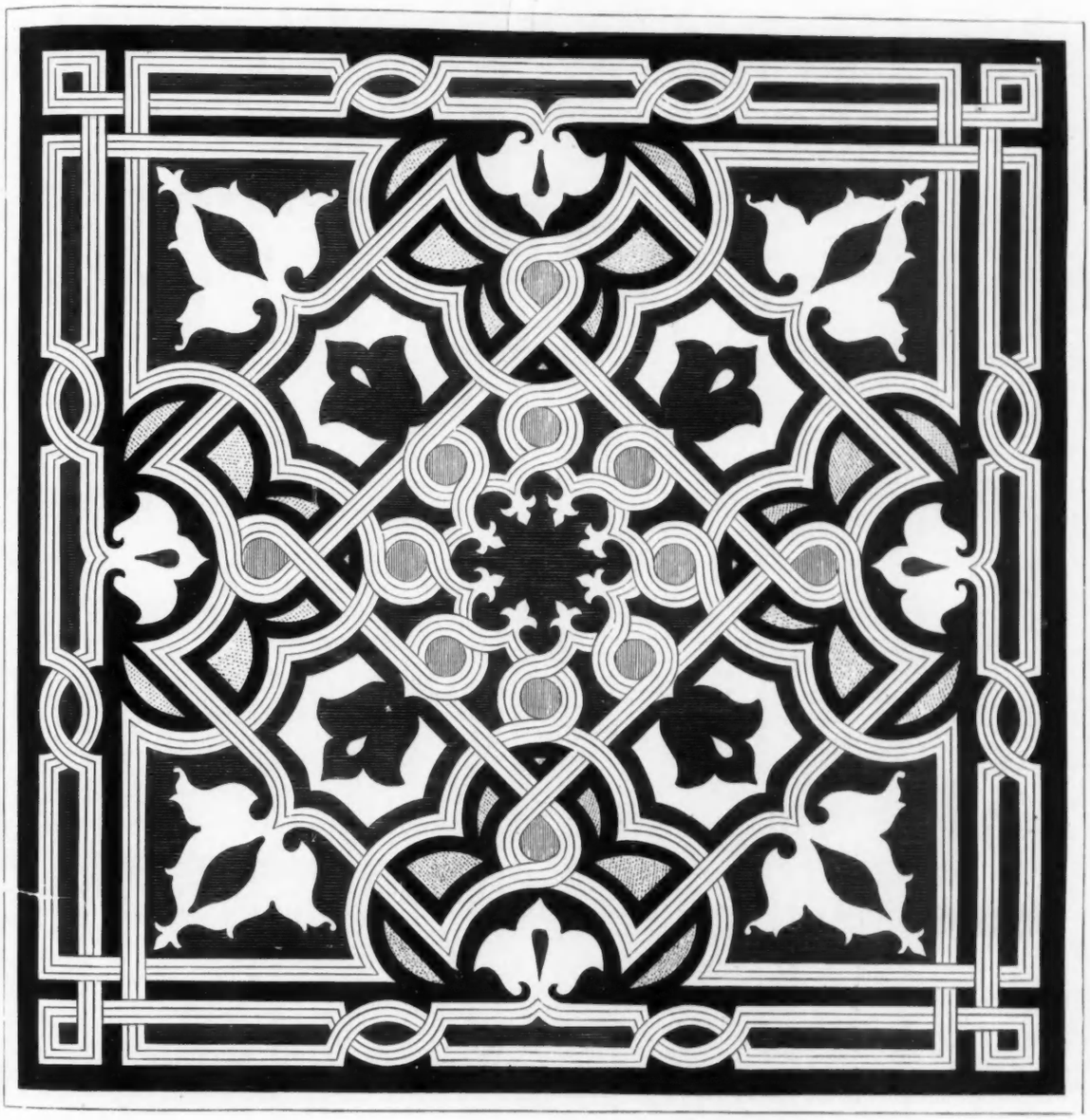
No. 6.



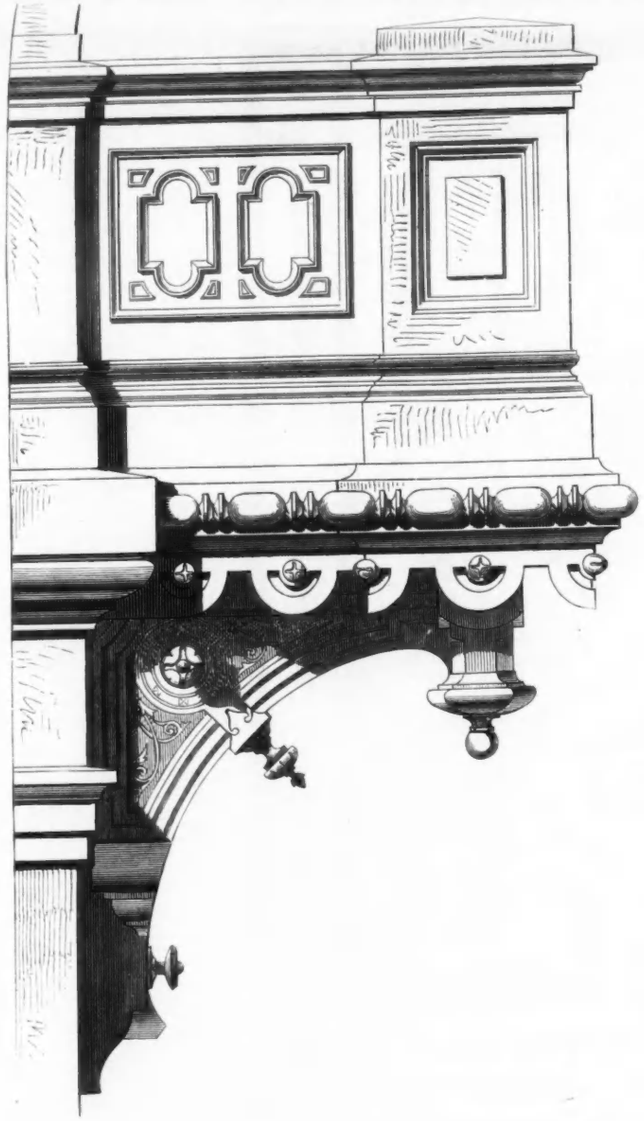
No. 7.

No. 5. German. — Carved Ornament in Wood rom the Collections of Prince Hohenzollern-Sigmaringen.
No. 6. Italian. — Ornament from Stalls of S. Pietro in Perugia.
No. 7. German. — Glazed Tile from a Stove in the Collections of the Germanic Museum Nuremberg. 1/2 real size.

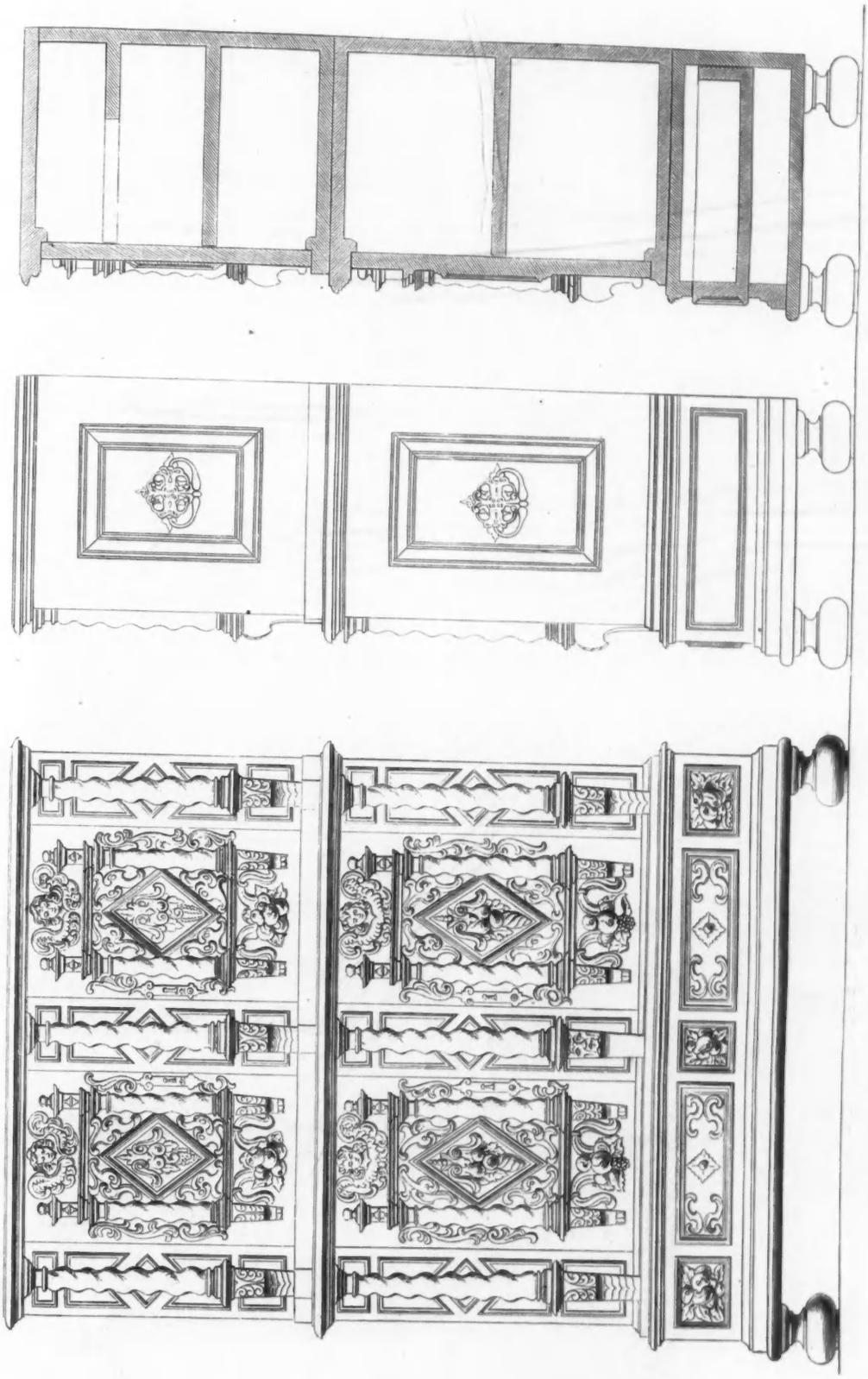
No. 8. — Pattern for Damask or Paper Hangings, designed by Mr. Ph. Niederhöfer, Munich.



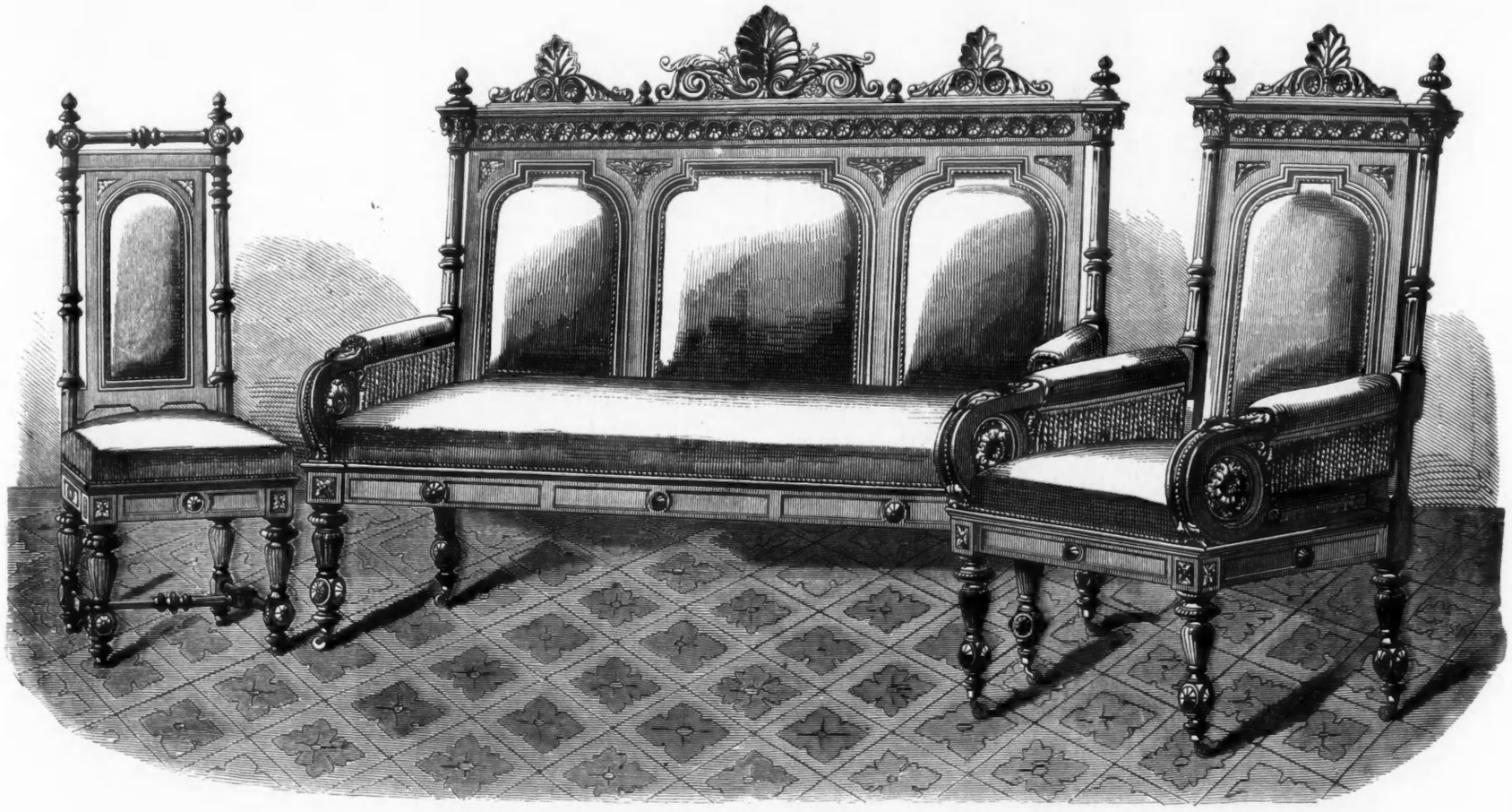
No. 9. Arab. — Decoration from Great Mosque, Damascus; design white, ground alternately red, black, blue, and gold.



Nos. 10 and 11. Design of Balcony from Waggon-shed of Great Central Railway Depot, New-York, by Mr. Edward Schott, Archt.

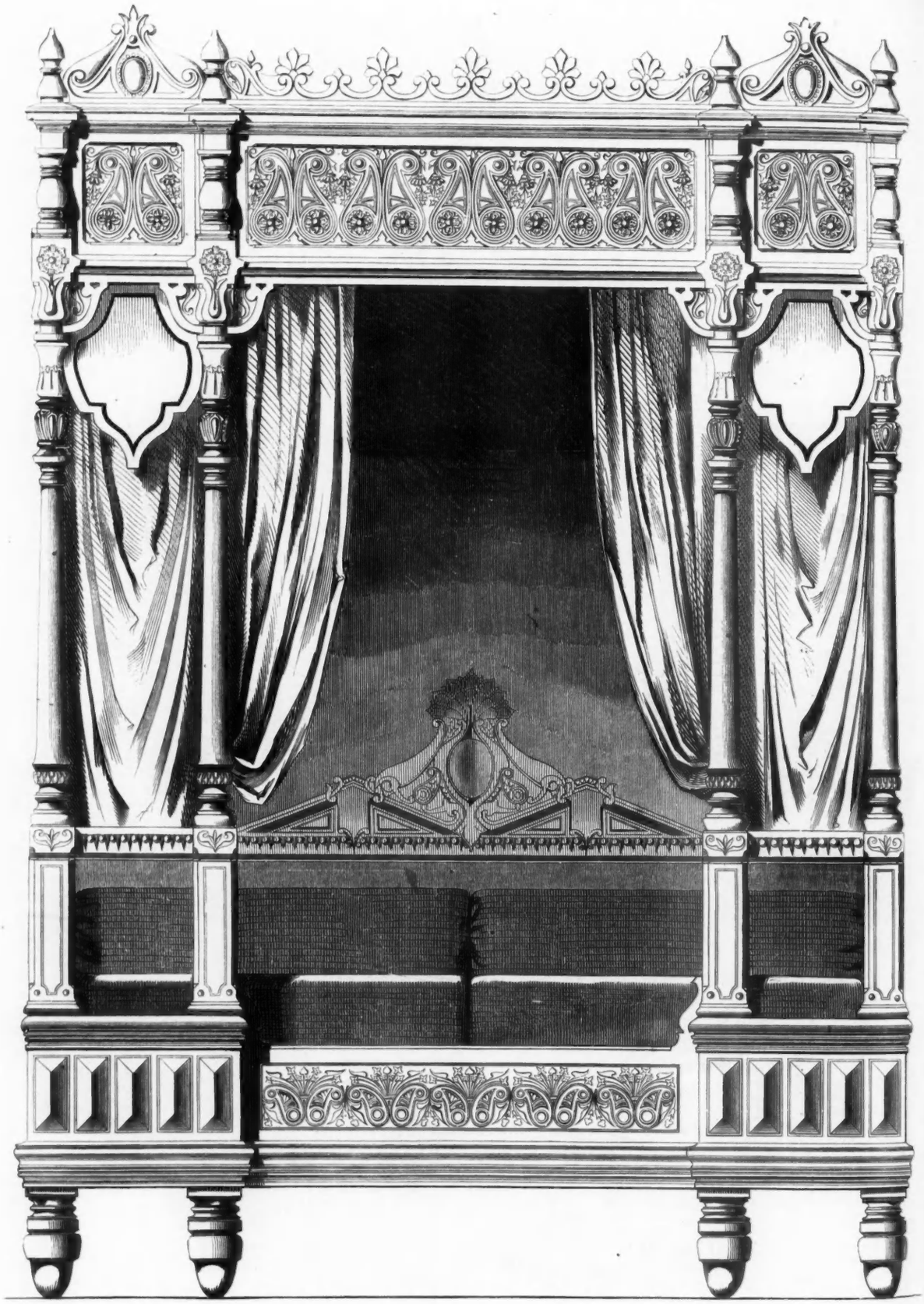


Nos. 12—14. German; end of sixteenth century. — Oak Cabinet with double folding-doors. Front and side elevations and section.



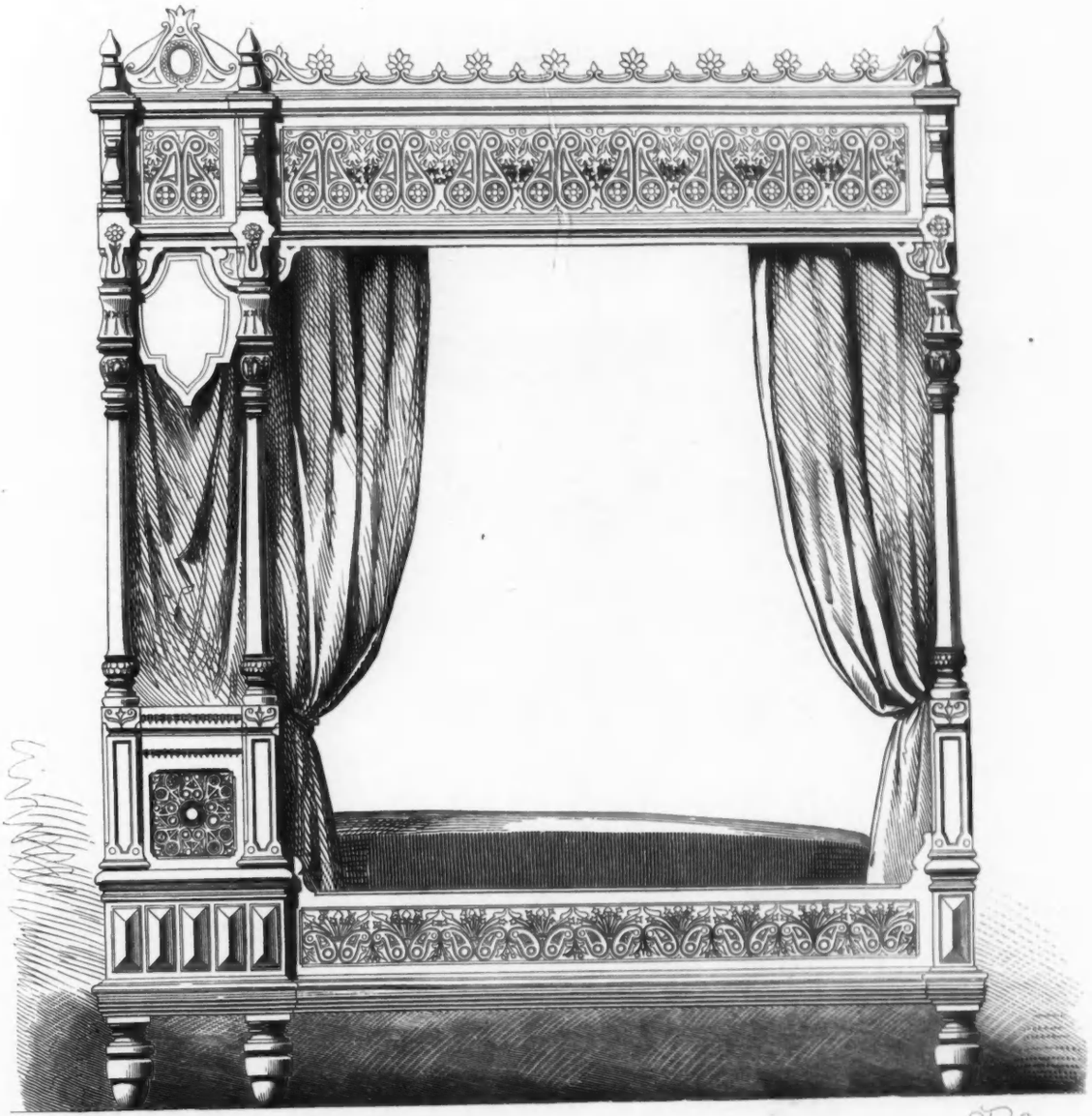
Nos. 15–17. Chair, Sofa and Arm-Chair, designed and manufactured by the Renaissance Company for the Promotion of Wood Carving, Berlin. Messrs. L. and S. Lövinson R. Kemnitz.
Details No. 1 of Supplement.

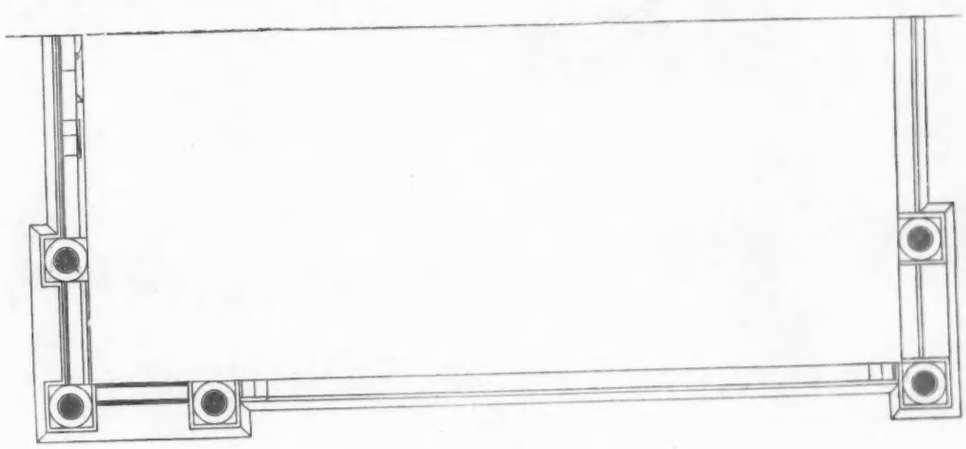
Nos. 18—22. Designs for Drinking Vessels in cut glass, with engraved or gilt ornament by Mr. Aug. Toepfer, Archt., Augsburg
Ornaments applied on foot of vessels in transparent or colored glass.



No. 23.

Nos. 23 and 24. Bed-stead in stained wood enriched with glazed enamelled tiles, designed by Mr. Paul Bénard Archt. Paris. Details Nos. 4—6 of Supplement.





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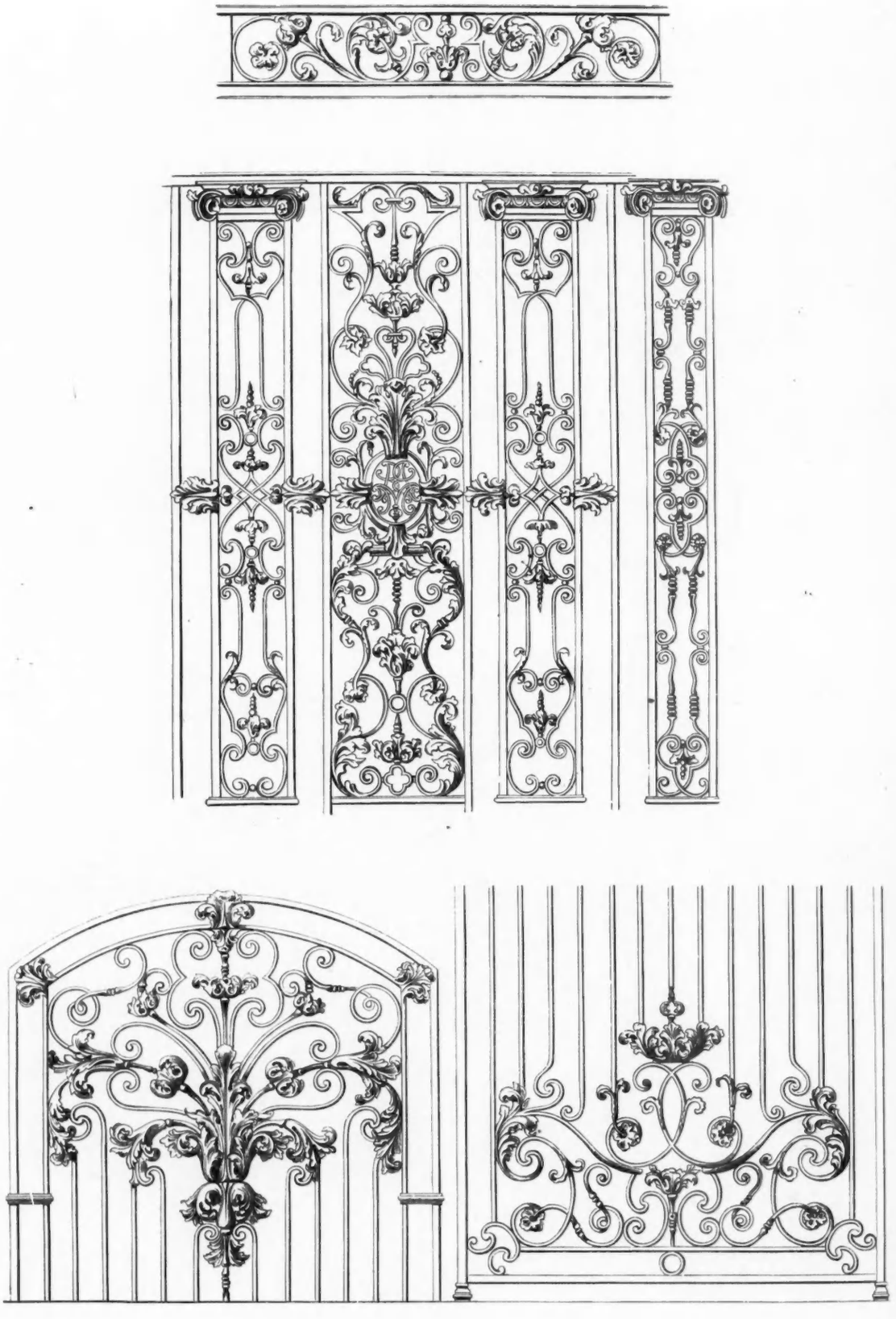

Nos. 25–27. Details of Wrought-iron Screen from St. Ouen Church, Rouen.

No. 28. Design of What-not by Mr. C. Berger, Archt. London, in stained pear and purple wood; cedar-wood mouldings and box-wood inlays.
Details Nos. 2 and 3 of Supplement.

Nos. 29—33. Niello Decoration for Arms, designed by M. Tissot, Paris.

VARIOUS.

Vitrified Marble.

The material itself results from the admixture, and melting together in a furnace, of equal parts of certain vitreous and silicious substances in about equal proportions, to which are added, at a suitable stage and in the requisite quantities, such coloring materials as will produce the desired effects, either as a plain body color equally diffused throughout the mass, or in veins of one or more colors with or without ground. When in a semi-fluid state, while yet hot, small or large masses of this plastic matter are cut off and pressed into iron or steel moulds carefully formed to the desired shape. In this manner decorative objects of any size, shape, or appearance can be produced with the utmost facility and rapidity of execution.

The manner in which natural materials of all kinds can be imitatively reproduced is extraordinary; ordinary marbles, veined and other, porphyry and malachite, jade, lapis lazuli, etc, thus prepared are, if anything, more real than the genuine objects themselves, and have the advantage of being in forms that could only be obtained out of the originals with great labor, waste, and cost. They can also be obtained and applied in bulk and solid masses, as for vases, paper weights, inkstands, table tops, etc., or in minuter portions, such as pateræ and tesseræ, or amorphous pieces for mosaic work in every variety, suitable for dadoes, pavements, etc. For the latter purpose, the vitrified marble paving possesses an important advantage over marble and encaustic tiles, in relation to the surface, which is rougher and more safe and pleasant to tread upon, giving good foothold and equable wear, while lending itself to every pattern, regular or the reverse. And it is not only in respect of mere surface patterns, but also of raised designs and moulded forms of every species, that this material is susceptible of adaptation. Indeed, the sharpness of definition and accuracy of detail, of which it admits, are alike noteworthy.

It cannot, moreover, be said of this invention, as of so many others, that the fairness of its promise in conception is marred or belied in practical application. On the contrary, it is sufficient to say that the most eminent architects of the day have given their testimony, in evidence of its merits, by adopting it in leading works, which are alike monuments of their skill and of national objects. Mr. G. Gilbert Scott, for example, has made use of it largely in the bosses and gems for the decorative work of the Royal Albert Memorial in Hyde Park; and nearly 2,000 of these ornaments have been introduced therein, studding and decorating the work with equal brilliancy and effect. Jesse Rust, of 15 Coleman street, E. C., London, England, is the patentee of the above material.

Scientific American.

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Ammonia as a Motive Power.

This motive power (put to use by G. Bastianelli, of Florence) acts in the same manner as steam and is as easily controlled; requires but a small amount of steam to develop its immense force the heat necessary for producing the pressure of ten atmospheres being limited to 134° to 142° Fahrenheit, and can now, it is said, be readily adapted to any machinery worked by steam, the new engine being quite simple in construction. The saving of fuel is nearly 70 per cent. The complicated copper boiler, with its 150 tubes, is entirely dispensed with. The ammonia acts in continuous rotation, as it at once condenses and returns into the boiler, the quantity escaping being scarcely observable, and requiring only annual replacement. In sea voyages the saving of 70 per cent. of fuel is naturally of paramount importance, as, besides reducing by two-thirds the daily expenses, it also allows of more space for freight. The inventor has laboured incessantly for twelve years in endeavouring to find out a practical mode of applying this new motive power. The machine exhibited in Paris at the International Exhibition was complicated and lumbering. The actual engine is said to be simple, and its advantages and expediency therefore obvious. The inventor has taken out a patent for Italy, and will insure to his invention the same privilege all over the civilized world.

The Builder.

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FIG. 1 PART 1

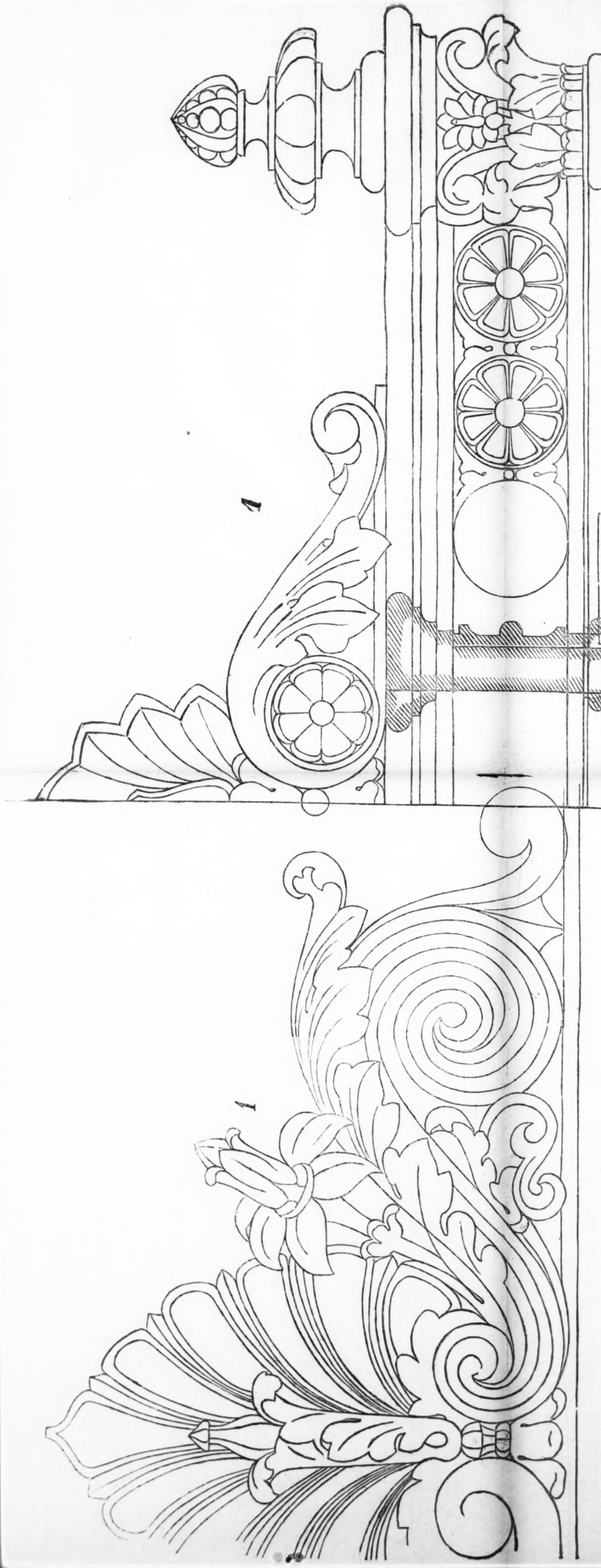

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FIG. 1 PART 2

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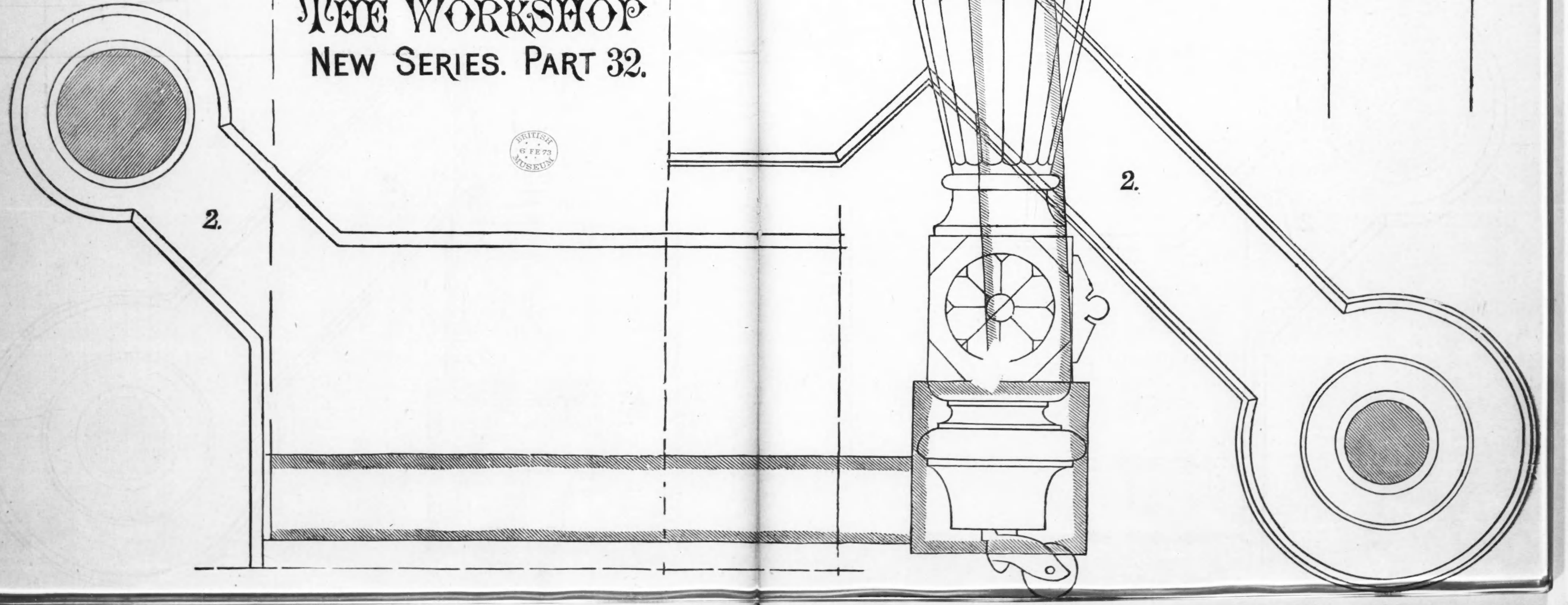
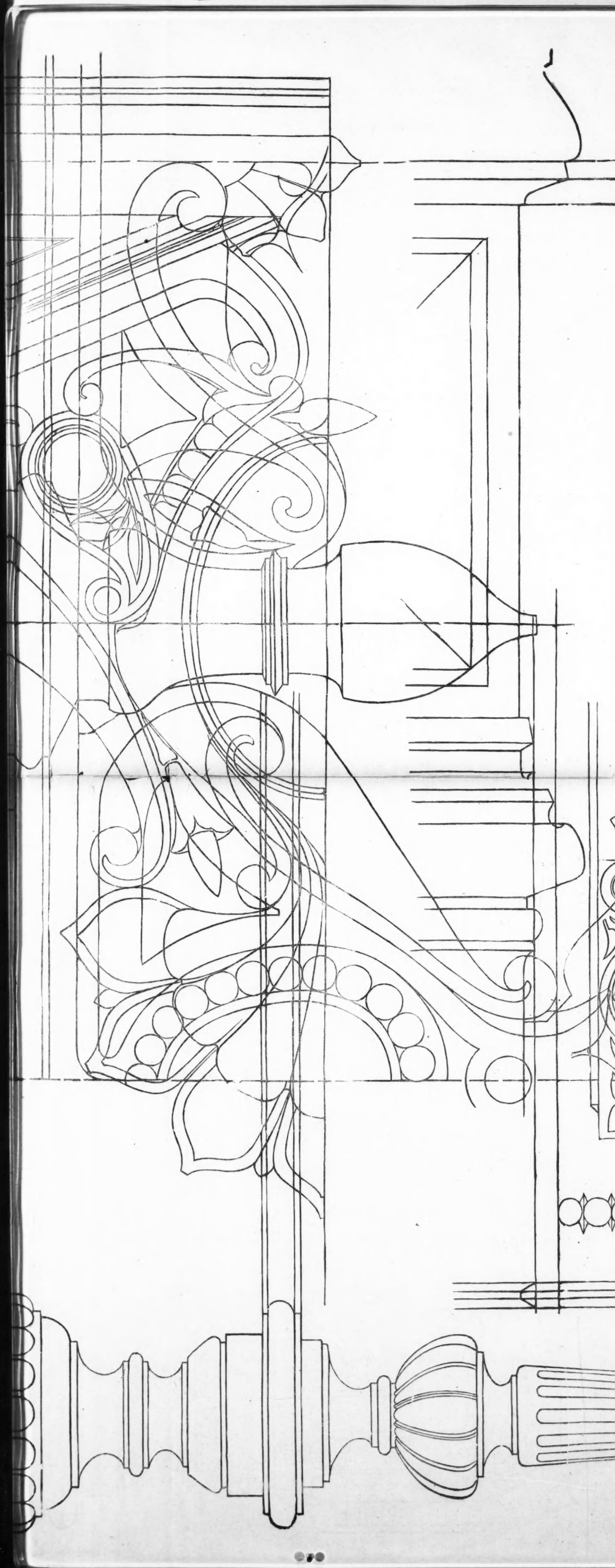


FIG. 2 PART 1



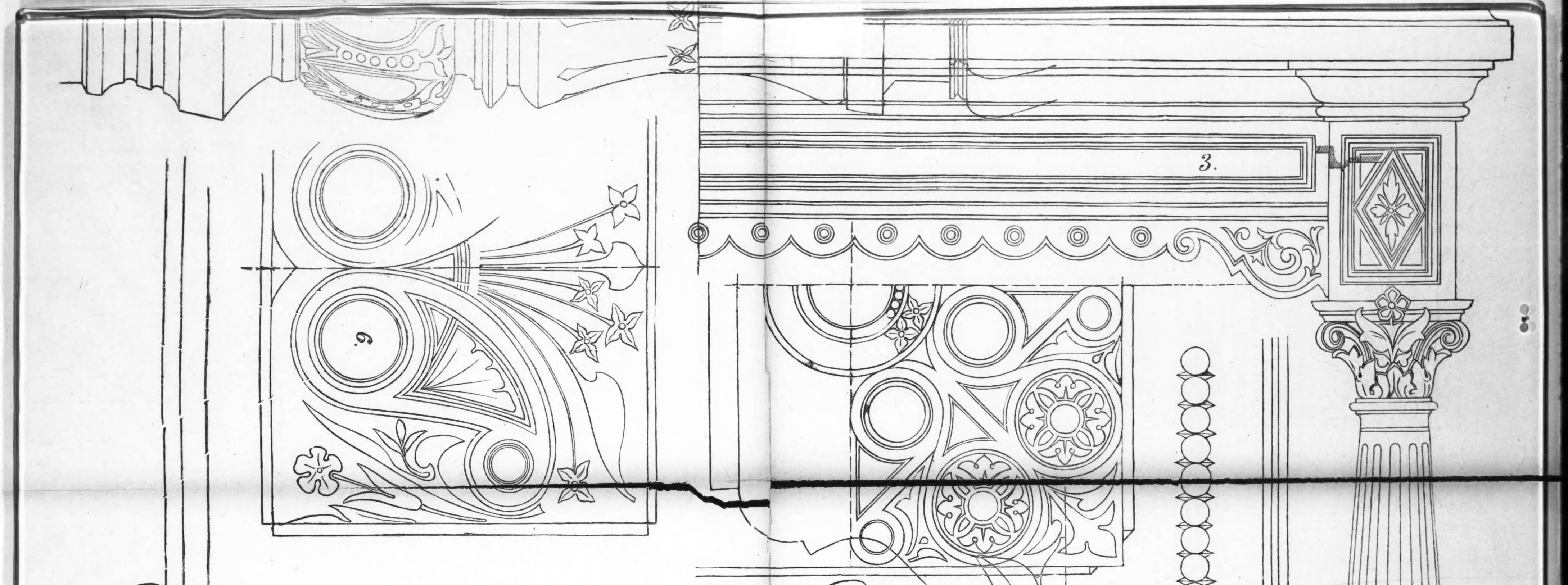

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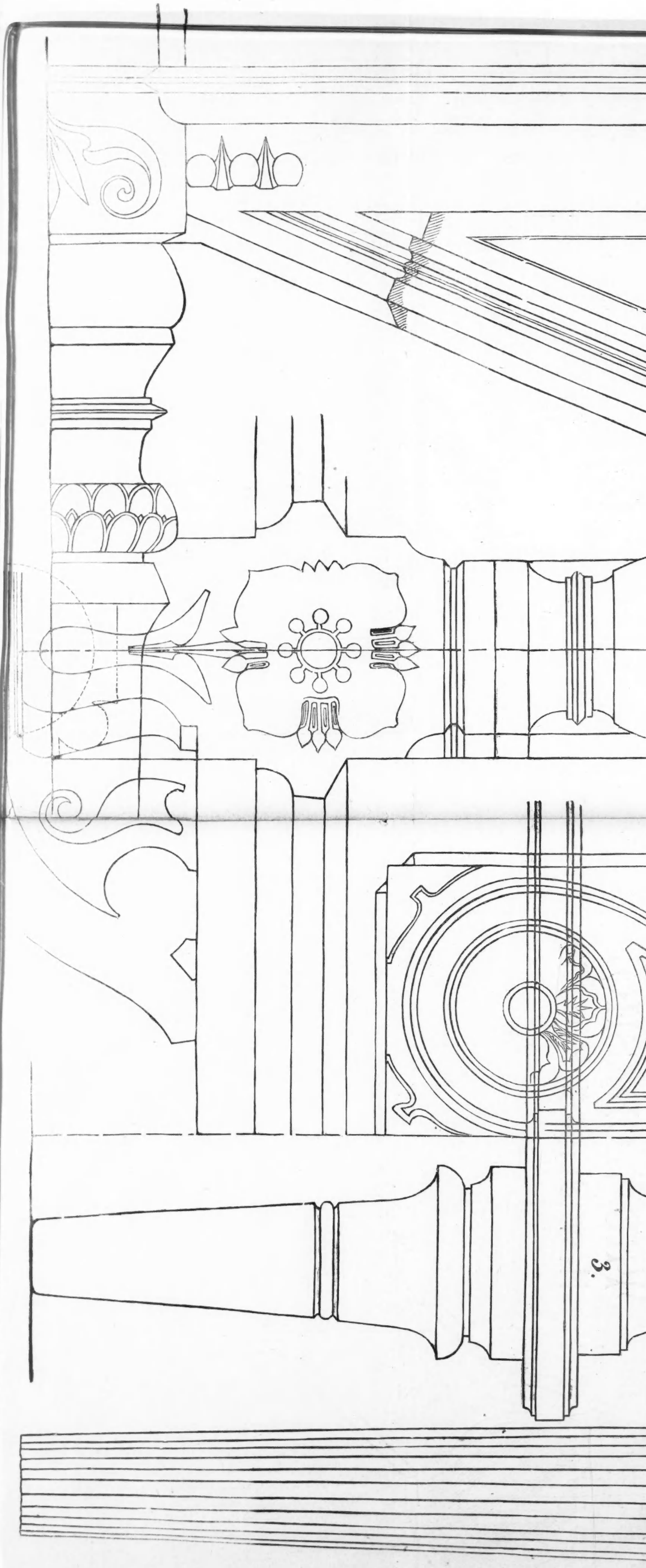
FIG. 2 PART 2



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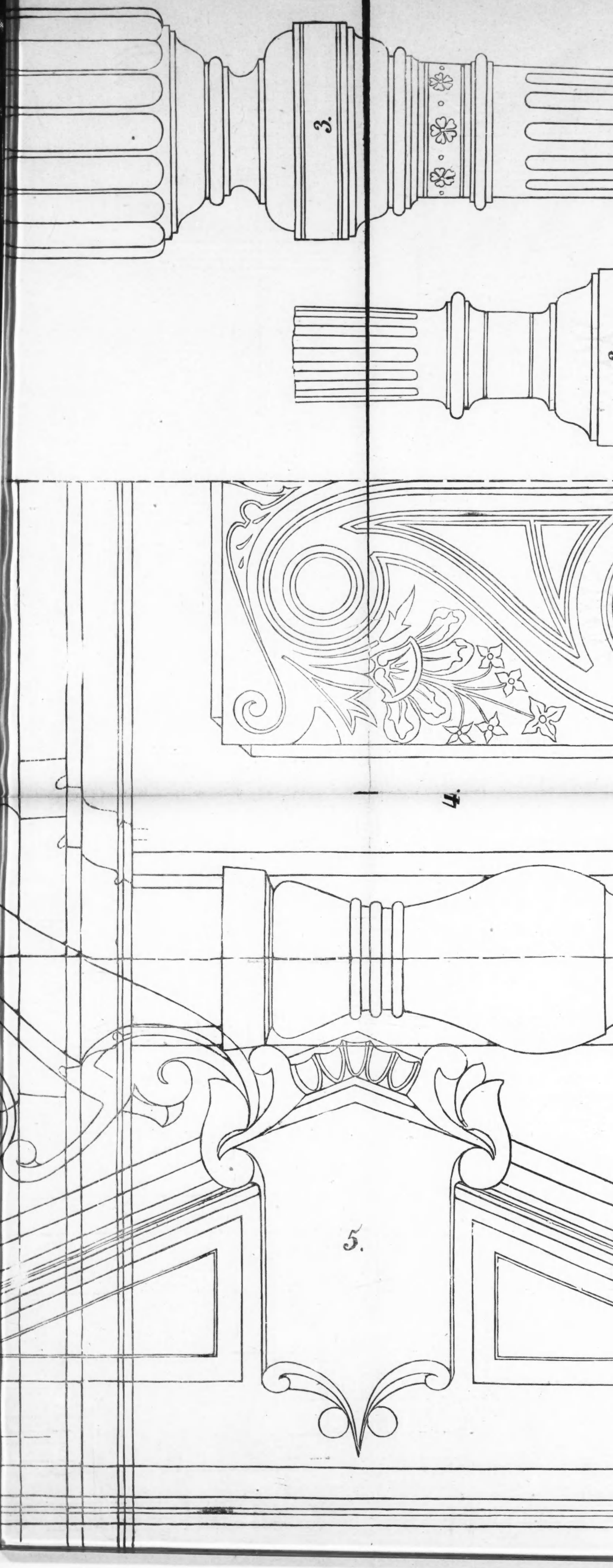
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